

REMARKS

Applicant has carefully reviewed and considered the Office Action mailed on March 13, 2003, and the references cited therewith.

Applicant gratefully acknowledges the Examiner's conditional indication of allowability of claims 5, 30, and 34.

Applicant again notes an inadvertent renumbering of claims beginning at claim 24 in the Preliminary Amendment. This error has been corrected. Applicant notes, however, that claim 25 as originally presented and as currently presented, may not have been examined. This inadvertence is regrettable, but Applicant respectfully contends this does not change the asserted patentability for all pending claims.

Claims 1-18 and 24-35 are now pending in this application.

Information Disclosure Statement

Applicant respectfully requests that a copy of the 1449 Form, listing all references that were submitted with the Information Disclosure Statement filed on April 30, 2001, marked as being considered and initialed by the Examiner, be returned with the next official communication.

§102 Rejection of the Claims

Claims 1, 2, 4, 6, 7, 18, 25, 27 and 32 were rejected under 35 USC § 102(b) as being anticipated by Sylvester (U.S. 6,014,317). Applicant respectfully traverses this rejection and requests the Office to consider the following.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." (*Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987), M.P.E.P. §2131, 8th Ed., Rev. 1).

Claim 1 requires "a metallization layer built up upon said die and said package core . . ." The Office Action mistakenly asserts that "Sylvester discloses . . . the metallization layer including a first portion located over/contacting the die and a second portion located over the package core." (Office Action at pages 3 and 4). This characterization of the language of claim

1 is incorrect. The metallization layer must include being " built up upon said die and said package core." (Claim 1).

There is no structure in Sylvester that meets this limitation of claim 1. That the chip 18 of Sylvester appears to be suspended above the package 12, confirms that there is no metallization layer " built up upon said die and said package core." (Claim 1). Because each and every element as set forth in the claim is not found, either expressly or inherently described, in Sylvester, withdrawal of the rejection is respectfully requested.

Applicant notes that claims 2-18 depend from claim 1. Because each and every element of the claims is not taught in the cited reference, withdrawal of the rejections of claims 2, 4, 6-7, and 18 is respectfully requested.

Independent claim 24, as originally presented and as currently presented, was also rejected over Sylvester. Claim 24 also requires

a metallization layer built over said first surface of said die/core assembly, said metallization layer having a first metallization portion over said die and a second metallization portion over said package core

(Claim 24). The Office Action mistakenly asserts that "Sylvester discloses substantially the entire claimed structure as applied to claim 1 above . . ." (Office Action at page 5). Applicant has demonstrated that Sylvester does not teach or suggest the limitation as set forth above. This characterization of the language of claim 24 is incorrect. The metallization layer must include being "built over said first surface of said die/core assembly, said metallization layer having a first metallization portion over said die and a second metallization portion over said package core . . ." (Claim 24).

There is no structure in Sylvester that meets this limitation of claim 24. That the chip 18 of Sylvester appears to be suspended above the package 12, confirms that there is no metallization layer "built over said first surface of said die/core assembly, said metallization layer having a first metallization portion over said die and a second metallization portion over said package core . . ." (Claim 24). Because each and every element as set forth in the claim is not found, either expressly or inherently described, in Sylvester, withdrawal of the rejection is respectfully requested.

Applicant notes that the limitations of claim 25, as restored, are likewise not anticipated or suggested by the cited references, either alone or in combination. Applicant urgently requests the notice of allowability of claim 25 as restored.

Applicant notes that claims 27 depends from claim 24. Because each and every element of the claims is not taught in the cited reference, withdrawal of the rejection of claim 27 is respectfully requested.

Independent claim 32 was also rejected over Sylvester. Independent claim 32 also requires

a metallization layer built up upon said die and said package core, wherein said metallization layer includes a first metallization portion over said die and a second metallization portion over said package core

(Claim 32). The Office Action mistakenly asserts that "Sylvester discloses substantially the entire claimed structure as applied to the claims 1 and 4 above . . ." (Office Action at page 6). Applicant has demonstrated that Sylvester does not teach or suggest the limitation as set forth above. The metallization layer must include being "built up upon said die and said package core, wherein said metallization layer includes a first metallization portion over said die and a second metallization portion over said package core . . ." (Claim 32).

There is no structure in Sylvester that meets this limitation of claim 32. That the chip 18 of Sylvester appears to be suspended above the package 12, confirms that there is no metallization layer "built up upon said die and said package core, wherein said metallization layer includes a first metallization portion over said die and a second metallization portion over said package core . . ." (Claim 32). Because each and every element as set forth in the claim is not found, either expressly or inherently described, in Sylvester, withdrawal of the rejection is respectfully requested.

§103 Rejection of the Claims

Claims 3, 28, 31 and 33 were rejected under 35 USC § 103(a) as being unpatentable over Sylvester in view of Kelly et al. (U.S. 5,798,567). Applicant respectfully traversed this rejection and requests the Office to consider the following.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (M.P.E.P. § 2143 8th Ed. Rev. 1).

The deficiencies of Sylvester as set forth above are incorporated herein by reference. The Office Action admits that "Sylvester . . . fails to specify the capacitor being a decoupling capacitor." (Office Action at page 6).

Regarding the first criterion, there is no occurrence where Kelly teaches or suggests the structural limitation of "a die fixed within a package core" (claim 1). Therefore, there is no teaching or suggestion in Sylvester to combine teachings therein with Kelly. Incidentally, because this die/core limitation is nowhere taught or suggested in Kelly, the other limitation that is not found in Sylvester, likewise cannot be found in Kelly, namely "a metallization layer built up upon said die and said package core" (claim 1). Withdrawal of the rejection is respectfully requested.

Regarding the second criterion, there is no expectation of success to achieve what is claimed by the combination of Sylvester with Kelly. This is because Kelly fails to teach a die/core structure as asserted above. Withdrawal of the rejection is respectfully requested.

Regarding the third criterion, because neither Sylvester nor Kelly teach the limitation that the metallization layer must include being "built up upon said die and said package core" (claim 1), not all the claims limitations are taught or suggested in the cited references. Withdrawal of the rejection is respectfully requested.

Claim 28 was also rejected over Sylvester in view of Kelly. Applicant incorporates the arguments set forth above regarding the deficiencies of Sylvester in view of Kelly. The Office Action states "Sylvester discloses . . . a capacitor (132 in Fig. 18) . . ." (Office Action at page 7).

This is incorrect. Item 132 is not a capacitor. It is a "false die" (column 19 in Sylvester).

Withdrawal of the rejection is respectfully requested.

Claim 31 was also rejected over Sylvester in view of Kelly. Applicant incorporates the arguments set forth above regarding the deficiencies of Sylvester in view of Kelly. The Office Action admits "Sylvester . . . fails to specify at least one capacitor being conductively coupled to an exposed portion of the metallization to provide de-coupling for the circuitry within the die." (Office Action at page 8). As set forth above, because the die/core limitation is nowhere taught or suggested in Kelly, the other limitation that is not found in Sylvester, likewise cannot be found in Kelly, namely "a metallization layer built up upon said die and said package core" (claim 1). Withdrawal of the rejection is respectfully requested.

Claim 33 was also rejected over Sylvester in view of Kelly. Applicant incorporates the arguments set forth above regarding the deficiencies of Sylvester in view of Kelly. Applicant notes that claim 33 depends from claim 32, which includes the limitation of

a metallization layer built up upon said die and said package core, wherein said metallization layer includes a first metallization portion located over said die and a second metallization portion located over said package core

(claim 32). The Office Action admits "Sylvester fails to specify the capacitor being a decoupling capacitor for providing de-coupling for the circuitry within the die." (Office action at page 8). As set forth above, because the limitation of " a die fixed within a package core " (claim 32) is nowhere taught or suggested in Kelly, the other limitation that is not found in Sylvester, likewise cannot be found in Kelly, namely "a metallization layer built up upon said die and said package core" (claim 32). Because all the claims limitations are not taught in the cited references, withdrawal of the rejections is respectfully requested.

Claims 8-17 and 35 were also rejected under 35 USC § 103(a) as being unpatentable over Sylvester in view of Harada et al. (U.S. 5,523,622). Applicant respectfully traverses this rejection and requests the Office to consider the following.

Regarding claims 8-17 and 35, Applicant notes that neither Sylvester nor Harada teach the limitation of "a metallization layer built up upon said die and said package core" (claim 1 from which claims 8-17 depend, and claim 32 from which claim 35 depends). Because all the

claims limitations are not taught in the cited references, withdrawal of the rejections is respectfully requested.

Regarding claim 8, the Office Action admits that "Sylvester . . . fails to specify the details of the routing/pattern of the metallization/metal cladding providing a ground plane for the transmission structure within the metallization during operation of the device by a conductive coupling of the metal cladding" (Office Action at page 9). Applicant notes that claim 8 depends from claim 7. In the rejection of claim 7, under 35 U.S.C. § 102(b), Applicant notes that the Office Action referred to a "metallic cladding" (Office Action at page 5), but no reference was provided. Applicant respectfully asserts that no reference was provided because no "metallic cladding" exists in Sylvester to anticipate claim 7. Applicant also respectfully asserts that no metallic cladding exists in Harada to remedy the deficiency of Sylvester. Because every limitation is not taught or suggested in the cited references, withdrawal of the rejection is respectfully requested.

Regarding claim 9, the Office Action admits that "Sylvester . . . fails to specify the details of the routing/pattern of the metallization/metal cladding where the metallic cladding is conductively coupled to a power source during device operation to form a power plane. " (Office Action at page 10). Applicant notes that claim 9 depends from claim 7. In the rejection of claim 7, under 35 U.S.C. § 102(b), Applicant notes that the Office Action referred to a "metallic cladding" (Office Action at page 5), but no reference was provided. Applicant respectfully asserts that no reference was provided because no "metallic cladding" exists in Sylvester to anticipate claim 7. Applicant also respectfully asserts that no metallic cladding exists in Harada to remedy the deficiency of Sylvester. Because every limitation is not taught or suggested in the cited references, withdrawal of the rejection is respectfully requested.

Regarding claim 10, the Office Action admits that "Sylvester . . . fails to specify the details of the routing/pattern of the metallization/metal cladding where the metallization includes at least one ground pad being conductive coupled to the metallic cladding on the package core through one of more vias. " (Office Action at page 11). Applicant notes that claim 10 depends from claim 7. In the rejection of claim 7, under 35 U.S.C. § 102(b), Applicant notes that the Office Action referred to a "metallic cladding" (Office Action at page 5), but no reference was provided. Applicant respectfully asserts that no reference was provided because no "metallic

"cladding" exists in Sylvester to anticipate claim 7. Applicant also respectfully asserts that no metallic cladding exists in Harada to remedy the deficiency of Sylvester. Because every limitation is not taught or suggested in the cited references, withdrawal of the rejection is respectfully requested.

Regarding claim 11, the Office Action admits that "Sylvester . . . fails to specify the metallization on the die including a plurality of power pars and ground bars distributed on the surface where each of the power and ground bars being conductively couple to respective multiple power and ground pads of the die." (Office Action at pages 11 and 12). Applicant notes that claim 11 depends from claim 1. As set forth above, neither Sylvester nor Harada teach "a metallization layer built up upon said die and said package core" (claim 1). Because every limitation is not taught or suggested in the cited references, withdrawal of the rejection is respectfully requested.

Regarding claim 12, the Office Action admits that "Sylvester . . . fails to specify using a plurality of power bars and ground bars being interleaved within a central region the surface of the die." (Office Action at page 12). Applicant notes that claim 11 depends ultimately from claim 1. As set forth above, neither Sylvester nor Harada teach "a metallization layer built up upon said die and said package core" (claim 1). Because every limitation is not taught or suggested in the cited references, withdrawal of the rejection is respectfully requested.

Regarding claim 13, the Office Action admits that "Sylvester . . . fails to specify a plurality of signal contact pads being distributed using a plurality of signal contact pads being distributed within a peripheral region of the surface of the die." (Office Action at page 13). Applicant notes that claim 13 depends ultimately from claim 1. As set forth above, neither Sylvester nor Harada teach "a metallization layer built up upon said die and said package core" (claim 1). Because every limitation is not taught or suggested in the cited references, withdrawal of the rejection is respectfully requested.

Regarding claim 14, the Office Action admits that "Sylvester . . . fails to specify the metallization layer including at least power landing pad situated over the die being conductively coupled to multiple power bond pads through corresponding via connections." (Office Action at page 13). Applicant notes that claim 14 depends from claim 1. As set forth above, neither Sylvester nor Harada teach "a metallization layer built up upon said die and said package core"

(claim 1). Because every limitation is not taught or suggested in the cited references, withdrawal of the rejection is respectfully requested.

Regarding claim 15, the Office Action admits that "Sylvester . . . fails to specify the metallization layer including at least ground landing pad situated over the die being conductively coupled to multiple power bond pads through corresponding via connections." (Office Action at page 14). Applicant notes that claim 15 depends ultimately from claim 1. As set forth above, neither Sylvester nor Harada teach "a metallization layer built up upon said die and said package core" (claim 1). Because every limitation is not taught or suggested in the cited references, withdrawal of the rejection is respectfully requested.

Regarding claim 16, the Office Action admits that "Sylvester . . . fails to specify the metallization layer including at least power landing pad situated over the package core and being conductively coupled to multiple power bond pads on the die through a trace portion extending over the die and a plurality of via connections." (Office Action at page 13). Applicant notes that claim 16 depends from claim 1. As set forth above, neither Sylvester nor Harada teach "a metallization layer built up upon said die and said package core" (claim 1). Because every limitation is not taught or suggested in the cited references, withdrawal of the rejection is respectfully requested.

Regarding claim 17, the Office Action admits that "Sylvester . . . fails to specify the metallization layer including at least signal landing pad situated over the package core being conductively coupled to a signal bond pad through a path including a transmission line segment." (Office Action at page 16). Applicant notes that claim 17 depends from claim 1. As set forth above, neither Sylvester nor Harada teach "a metallization layer built up upon said die and said package core" (claim 1). Because every limitation is not taught or suggested in the cited references, withdrawal of the rejection is respectfully requested.

Regarding claim 35, the Office Action admits that "Sylvester . . . fails to specify including at least ground pad being conductively coupled to the metallic cladding on the package core through one or more via connections." (Office Action at page 16). Applicant notes that claim 35 depends from claim 32. As set forth above, neither Sylvester nor Harada teach "a metallization layer built up upon said die and said package core" (claim 32). Because every

limitation is not taught or suggested in the cited references, withdrawal of the rejection is respectfully requested.

Claim 26 was also rejected under 35 USC § 103(a) as being unpatentable over Sylvester in view of Blish, II et al. (U.S. 6,049,465). Applicant respectfully traverses this rejection and requests the Office to consider the following.

Regarding claim 26, the Office Action admits that "Sylvester . . . fails to specify the first array of contacts including a plurality of pins." (Office Action at page 17). Applicant notes that Blish has no structure equivalent to a core. As discussed above, because Sylvester has a structure equivalent to a core 22, but has no

metallization layer built up over said first surface of said die/core assembly, said metallization layer having a first metallization portion over said die and a second metallization portion over said package core

(claim 24, from which claim 22 depends). Because all the claims limitations are not taught in the cited references, withdrawal of the rejection of claim 26 is respectfully requested.

Claim 29 was also rejected under 35 USC § 103(a) as being unpatentable over Sylvester in view of and Kelly et al., and further in view of Harada et al. Applicant respectfully traverses this rejection and requests the Office to consider the following.

The deficiencies of Sylvester, Kelly, and Harada singly and collectively as discussed above, are incorporated herein by reference. Regarding claim 29, the Office Action admits that "Sylvester and Kelly . . . fail to specify the metallization layer including at least power landing pad situated over the die being conductively coupled to multiple power bond pads on the die and to a corresponding power contact on the grid array interposer unit." (Office Action at page 18). Applicant notes that Harada includes a dam or square frame 210, but even Harada does not teach the limitation of

a metallization layer built up over said first surface of said die/core assembly, said metallization layer having a first metallization portion over said die and a second metallization portion over said package core

(claim 24, from which claim 29 depends). Because all the claims limitations are not taught in the cited references, withdrawal of the rejection of claim 29 is respectfully requested.

Allowable Subject Matter

Claims 5, 30 and 34 were objected to as being dependent upon a rejected base claim, but were indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicant gratefully acknowledges this notice of allowable subject matter. Applicant notes claim 5 depends from claim 1, and because claim 1 was not anticipated, Applicant respectfully asserts that claim 5 is allowable over the cited references. Applicant notes claim 30 depends from claim 24, and because claim 24 was not anticipated, Applicant respectfully asserts that claim 30 is allowable over the cited references. Applicant notes claim 34 depends from claim 32, and because claim 32 was not anticipated by Sylvester, Applicant respectfully asserts that claim 34 is allowable over the cited references.

AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111

Serial Number: 09/845896

Filing Date: April 30, 2001

Title: HIGH PERFORMANCE, LOW COST MICROELECTRONIC CIRCUIT PACKAGE WITH INTERPOSER

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Dkt: 884.409US1

Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney, John N. Greaves (810-278-9171) or Applicant's below-named attorney (612-349-9592) to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743

Respectfully submitted,

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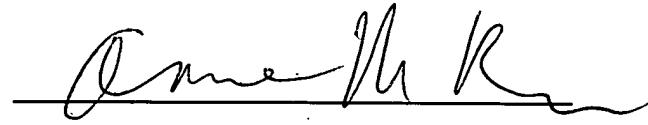
Date May 13, 2003

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: MS Non-Fee Amendment, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 13th day of May, 2003.

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Name



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